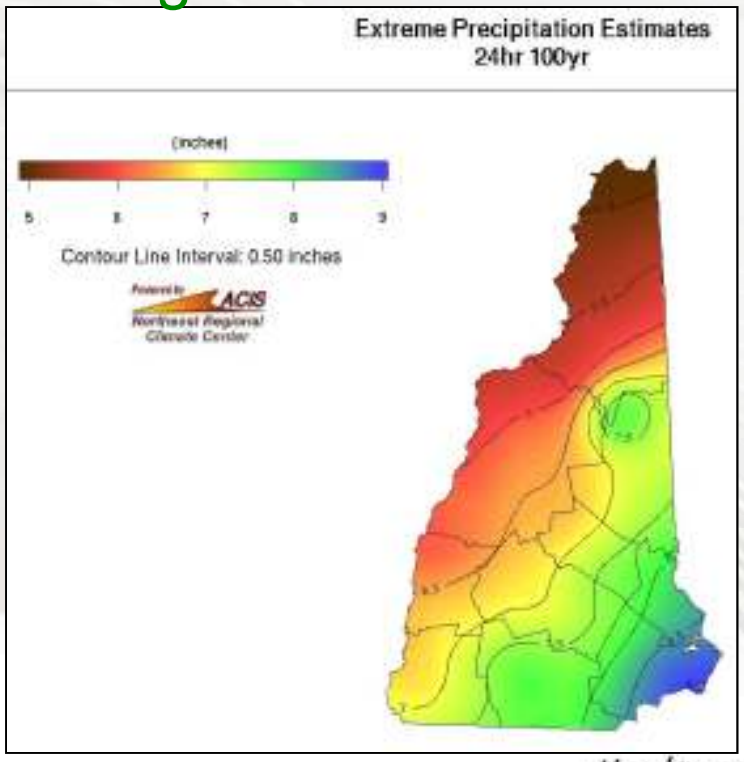
NHDOT and Climate Change: Actions, Opportunities & Challenges

Kevin Nyhan
Administrator
Bureau of Environment
NHDOT

Actions

(The things we're doing)

- Manual updates (Highway, Drainage, Bridge)
  - Consider that we are experiencing non-traditional climate events
- Hydrologic modeling
  - FROM TP-40 Rainfall Frequency Atlas
  - TO Northeast Regional Climate Center Atlas
  - NHDES adopted the NRCC precipitation data and NHDOT conformed



New Hampshire DOT
Department of Transportation

Actions
(The things we're doing)

- Collaborating with State Agencies
  - NHDES Stream Crossing Rules (Env-Wt Part 900)
    - Fluvial geomorphology
    - Tiered: larger watersheds are more highly regulated
    - Evaluate 20% greater than bankfull width
    - Where will water go in overtopping scenarios?
    - Relies on knowledge of past maintenance at a site (history of flooding)

New Hampshire DOT
Department of Transportation

Actions

(The things we're doing)

- Collaborating with State Agencies
  - DOT Assessment of Vulnerability and Recommendation of Adaptive Strategies
    - DES Funding
    - Normandeau
  - ICNet
  - Coastal Risks and Hazards Commission

ICNet
INFRASTRUCTURE & CLIMATE NETWORK

New Hampshire DOT
Department of Transportation

Actions
(The things we're doing)

- Evaluating Vulnerability/Asset Management
  - Statewide Asset Data Exchange System (SADES)
    - Pilot project moving to production
    - Cloud-based crowd sourcing of data
    - Base and agency-specific data
    - Statewide efforts by
      - State agencies (DOT, DES, F&G)
      - Municipalities and RPCs
      - Trout Unlimited

Actions
(The things we're doing)

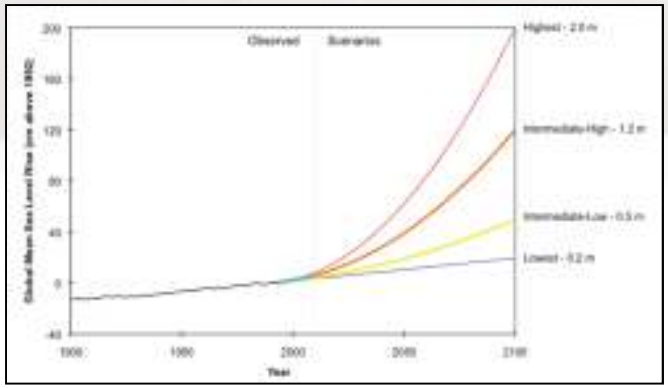
- Evaluating Vulnerability/Asset Management
  - New Asset Management Office
    - Pavement & Bridges
    - Other areas
      - Culverts
      - Signage
      - Sidewalks
      - Etc.

Opportunities

(The things we plan to do/could do)

- CRHC Science Advisory Panel Recommendations
  - For coastal locations where there is little risk tolerance:
    - **Determine** the timeframe
    - **Commit** to manage the "Intermediate high," but be **prepared** to manage the "Highest"
    - Be **aware** that projected sea level rise ranges may change

Scenario	SLR by 2100 (m)*	SLR by 2100 (ft)*
Highest	2.0	6.6
Intermediate-High	1.2	3.9
Intermediate-Low	0.5	1.6
Lowest	0.2	0.7

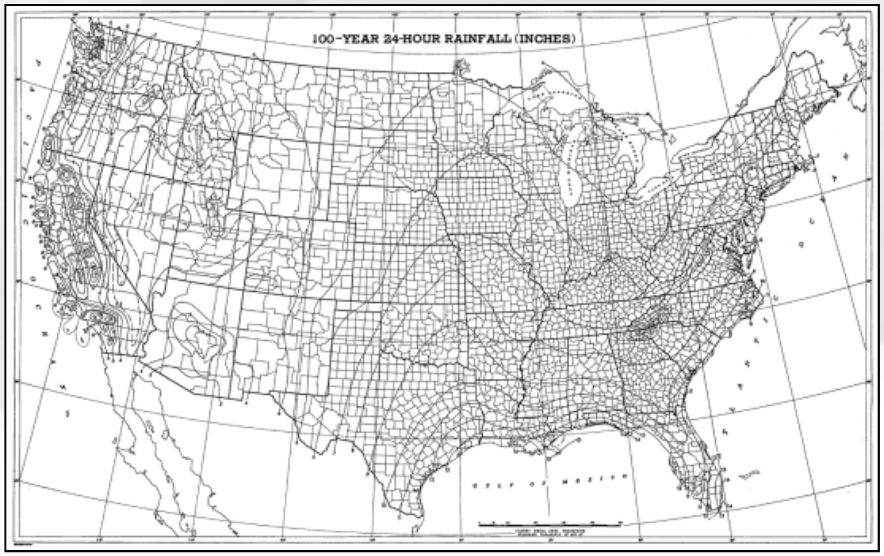


New Hampshire DOT Department of Transportation

Opportunities

(The things we plan to do/could do)

- CRHC Science Advisory Panel Recommendations
  - Precipitation (annual & extreme events) is expected to increase, but magnitude is uncertain
  - Plan for a 15% increase in precipitation after 2050
  - Update guidance as new science emerges



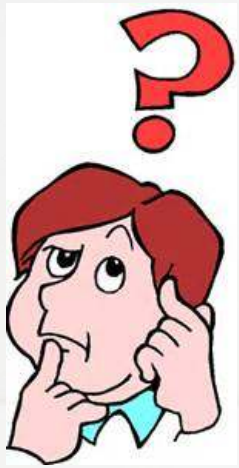
New Hampshire DOT
Department of Transportation

Opportunities

(The things we plan to do/could do)

- Stream Passage Improvement Program (SPIP)
  - Pilot program with NHDES
  - Funding starts as mitigation for I-93 impacts
  - Identify deficient culverts
    - Environmental
    - Structural
  - Uses SADES as the platform for data needs
  - Replace deficient culverts as mitigation for other project impacts (provides core data)
  - First grants anticipated for Spring 2016

Challenges
(Why it's tough)



- Education (designers, maintainers, the public)
- Climate change scenarios = variability = RISK
  - What is the "right" answer is hard to determine
- Getting the science into design guidance
  - We can do anything with numbers!
- Financial constraints – NH's current fiscal environment
  - Resiliency = higher short term costs
  - Resiliency = bigger short term impacts
  - We deal with short term budgets
- There are lots of data available…what's "right?"

New Hampshire DOT
Department of Transportation

Challenges
(Why it's tough)

- Competing priorities for limited resources
  - Where are the greatest risks?
  - What are the most deserving assets?
  - What is the risk of inaction?
- Resilient designs v "something else"
- Legal protections for Department decisions
  - Legislative actions?
  - Abandoning infrastructure
  - Resiliency may change the character of the landscape and adjacent properties
  - ROW settlements
- We do not control what our neighbors do

New Hampshire DOT
Department of Transportation